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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,671	06/04/2001	Yasuhiro Yamaji	04329.2567	1350

22852 7590 01/03/2003

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EXAMINER

MITCHELL, JAMES M

ART UNIT PAPER NUMBER

2827

DATE MAILED: 01/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,671

Applicant(s)

YAMAJI, YASUHIRO

Examiner

James Mitchell

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 26 is/are rejected.
- 7) ☐ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Buck (U.S. 5,203,721).

Buck (Fig 3) discloses a cylindrical substrate (5), at least one semiconductor chip (19) formed and mounted on an inner circumferential surface portion on an outer circumferential surface of said substrate, said semiconductor chip being bent along the surface of said substrate, wherein a plurality of terminals (16, 17) for connection are arranged in one edge portion in the longitudinal direction of said cylindrical substrate, said terminals electrically connected to said chip (Column 3, Lines 31-33).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-11, 13-15, 18, 19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buck.

Buck discloses the elements in paragraph, a chip arranged to cover an entire outer circumferential surface of said substrate, said chip is arranged no an inner circumferential surface of said substrate, an inherent reinforcing layer arranged inside the substrate reinforcing and bumps ("pins") formed on said chip, but does not appear to disclose a plurality of chips stacked one upon the other to form a stacked body on a surface of said substrate, or a plurality of stacked bodies arranged at a predetermined distance apart in the outer circumferential direction of said substrate however examiner takes official notice that it would have been obvious to one of ordinary skill in the art to stack chips in order to increase device density as was well known at the time the invention was made.

Furthermore, while the prior art doesn't appear to disclose a plurality of chips on the inner surface or stacked bodies, it would have been to one of ordinary skill in the art at the time the invention was made to duplicate chips, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (CA7 1977), *In re Harza* 124 USPQ 378 (CCPA 1960).

With respect to claims 6, 7, 9 and 15-21, said chips arranged on the inner circumferential surface by a predetermined distance apart form each other in a longitudinal direction in the substrate or on the outer and inner circumferential surface would have been obvious to one of ordinary skill in the art since it has been held that mere duplication of essential working components involves only

routine skill in the art. *In re Harza*, 124 USPQ 378 (CCPA 1960); *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (CA7 1977).

With respect to claims 10 and 22, Buck does not appear to show a chip sealed with resin, however examiner takes official notice that it would have been obvious to one of ordinary skill in the art to seal chip and substrate with a resin in order to protect the chip from hazards as was well known at the time the invention was made.

Claims 1-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar et al (U.S. 4,810,917) in combination with Chen.

Kumar (Fig 4) discloses a cylindrical substrate (20) having wires (not labeled) formed thereon, a plurality of semiconductor chip (Col. 2, Lines 24-25) mounted on an outer circumferential surface of said substrate (region closest to end of substrate); wherein an outer circumferential of said substrate is sealed with a resin (Column 5, Lines 3-5), and a plurality of terminals for connection arranged in one edge portion in a longitudinal direction; and method of bending a substrate into a cylindrical form (Col. 3, Line 65); and said chips are arranged over an inner circumferential surface (electronic component in middle of substrate); with said plurality of chips mounted a predetermined distance apart; and a reinforcing body (24, 26) arranged inside said cylindrical substrate (shown in Fig 4) .

Kumar does not appear to disclose that said chip is bent or has bumps in contact with wirings.

Chen utilizes a bent chips that are alternatively stacked (Intro. Par. 5). It would have been obvious to one of ordinary skill in the art to bend the chip of Kumar along the surface of substrate in order to increase density by maximizing board real estate as taught by Chen (Introduction).

As for the chip having bumps in contact with the wirings, examiner takes official notice that it would have been obvious to one of ordinary skill in the to form bump on a chip that are in contact with the wiring of Kumar in order to form a contact between chip and said wiring.

In regards to claims 4, 16 and 20, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to form the chip to cover the entire outer circumferential surface because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Response to Arguments

Applicant's arguments filed September 19, 2002 have been fully considered but they are not persuasive. Applicant's contention that the Buck reference does not have a substrate with wirings is an incorrect. First, the term substrate is broadly defined in the classification definitions as a material which an active device is formed on or in, as such a cable that has a chip formed on its surface is a substrate. Secondly, the alleged signal cable has wirings clearly shown on the substrate surface that forms electrical contact with a chip through a pin. So it unclear as to why applicant would still suggest there are no wirings when wirings are shown in the patent. As for applicant's distinction that Buck discloses a pin and not bumps, a bump is broadly defined in the classification definitions as an abrupt protuberance; it is therefore not mutually exclusive. Because applicant did not traverse the merits of the official notice statement, it has been deemed that applicant acknowledged the well-known technology and has waived its right to later object.

Allowable Subject Matter

Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

jmm
December 15, 2002



DAVID L. TALBOTT
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